Web-Based Tools for Medical Education Information Management

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INTRODUCTION

The World Wide Web has proven itself to be a powerful tool for the dissemination of medically oriented information. In addition, the paradigm of the Web, as an information dissemination medium, can be readily adapted to include information management, which is of additional value to the educational process. This could include activities such as grading assignments and course evaluation reporting which exact a substantial administrative burden on faculty, students and staff. The need to streamline course evaluations is particularly important at Baylor College of Medicine where a process of curriculum revision is underway. We therefore sought to create Web-based tools for faculty and students which would ameliorate this information management burden.

INFORMATION SYSTEMS

We developed an on-line Course Evaluation System (CES) and an on-line Assignment Tracking System (ATS) as pilot systems. As Web pages, these systems have the expected accessibility and ease of use. Of equal concern for our purposes was the ability to demonstrate to faculty the benefits of automation of otherwise arduous tasks.

We piloted the use of these tools in the context of our "Introduction to Medical Informatics," a required course component, in the new curriculum; approximately 180 first year medical students are trained during their first two weeks of class. The course performs two functions: remedial training in elementary computer communications skills, and the introduction of students to information resources in the Baylor computing environment. Part of their training included access to the World Wide Web, e-mail, MEDLINE and other Texas Medical Center Library reference services. To test the students' proficiency at the end of the course, they were assigned four medical information gathering tasks which applied the skills they had been taught.

Course graders were 15 faculty members competent to judge the quality of the information gathered in completion of the assignments; different faculty were responsible for different assignments. The assignments were submitted to the appropriate faculty member via e-mail. Prior to the start of the course, the faculty graders were trained in the use of the tools that they would be using to grade the students.

The ATS was used by the faculty instructors for recording student completion of the assignments. Information on a given assignment for a given student was recorded on the system using a Web page front end. The page consisted of a list of all student names, IDs and a row of buttons corresponding to each assignment. The ATS was accessible only to participating faculty. Once entered, information could be changed only by the course coordinator.

The CES was used by the students to evaluate the course itself. Submission of the evaluation was one of the required tasks for the course. To maintain privacy of the evaluations, their completion was tracked automatically by the ATS rather than passing through an instructor's hands. Information from Web evaluation forms was collected and stored in a tab-delimited text format for manipulation by external software. A Web-accessible summary of the data allowed course coordinators to monitor evaluation results.

The heart of these systems was a collection of programs written in C and Perl with which the Web pages communicated via the common gateway interface. The programs tabulated the data, maintained security and data integrity, and managed editing by course coordinators wherever necessary.

ASSESSMENT

Faculty and students were able to effectively use these tools with minimal training, and found them to be significantly more efficient than conventional, pen and paper methods. As a result of this pilot, several departments have asked for similar systems for their information management. The Curriculum Committee at Baylor is evaluating this system for coordinated distribution throughout the Medical Education program. Details of the design requirements, implementation, and implications of faculty acceptance of this system will be discussed.

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